EIGHTH GRADE.

KATHARINE M. STILWELL.

OUTLINE FOR APRIL, MAY, AND JUNE.

History and applied mathematics.— The work, as outlined in the February issue, will be continued in the spring quarter. Current events will be observed every week.

In March the general topic will be cotton. The pupils will study the cotton-gin, the spinning-jenny, the power-loom, life on a southern plantation, slavery, the Louisiana purchase, the admission of states — one northern, one southern — and especially the admission of Illinois.

Mathematical problems, similar to the following, will be used in teaching the history.

How long since the invention of the gin? One cotton-gin will do the work of how many slaves? Cost of gin and of operating it? How much cotton can be ginned daily? What is the average yield of cotton per acre? If the tract between the rivers, creek, and road represents a plantation drawn to a scale, about how much cotton will it yield at the average yield per acre?

What are the cotton states? How long since the cotton states were admitted?

How much was paid for the Louisiana purchase? If this was paid in silver coin, how much pure silver was required, a silver dollar weighing 412½ grains and containing .9, by weight, of pure silver?

The westward movement will be the subject in April. The topics to be discussed are the Missouri Compromise, the Lewis and Clarke expedition; the geography of the Louisiana territory, Oregon, Texas, California; the discovery of gold, and the mining industry.

SUGGESTIVE PROBLEMS.

Latitude and longitude of center of population by census years (*Daily News Almanac*, p. 49.

1. Find the change in the latitude of center of population from 1790–1800; 1800–1810; etc.

2. Find change in center of longitude for the same.

3. What does the ten-year change in longitude amount to in miles?

4. What does the change in latitude amount to? (See *Conklin's Argument Settler.*)

5. During which ten years was the change greatest? Can you tell why?

6. To find the total change of the center of population during any ten years, square the changes in latitude and longitude, add the squares, and extract the square root of the sum. Can you explain the reason for this rule? Find the total change for the period found in problem 5.

If these problems disclose ignorance of latitude and longitude on the part of the pupils, these subjects will be cleared up.

7. What was the extent of the Louisiana territory in longitude ? in latitude ?   What was its cost per square mile ?

C.

river

D

river

Creek

Cotton Plantation.

A   *B*

road

Scale ⅛″ = 10 rods.
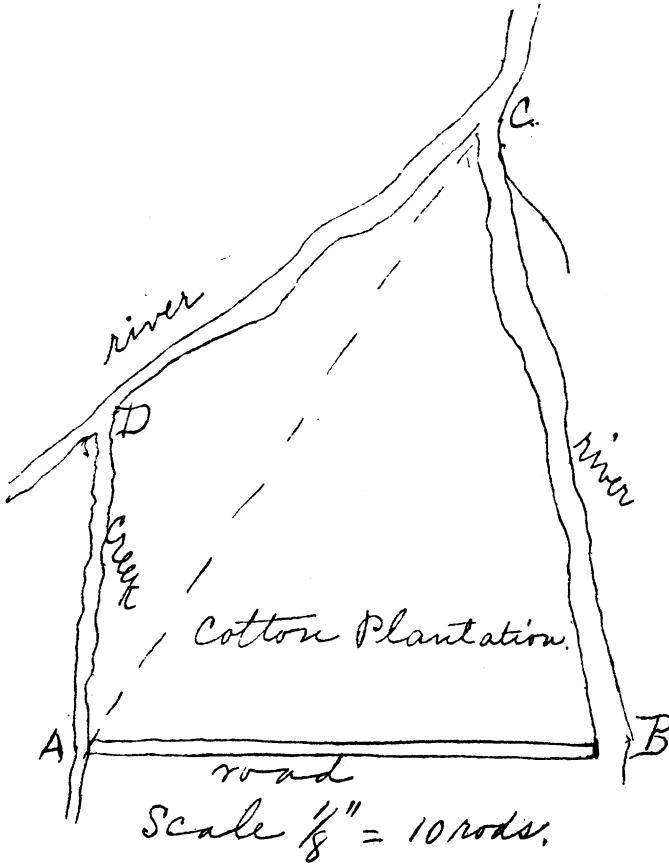
8. Into how many states and territories was the Louisiana territory divided ?   What was the average area ?

A study of angles will be made, so far as is necessary to an understanding of latitude and longitude.

Algebra will be studied with the geometry, by applying the notation and methods of algebra to the geometrical figures.

Any arithmetic topics not understood will be taken up whenever the need for the topic shows weakness or haziness in the pupil.

May: Railroads.   The senate of 1850, its problems, compared with the

problems before our present senate. Kansas and Nebraska. The story of Lincoln.

In related mathematics the pupils will learn how railroad curves are run, and they will study the properties of the circle. Algebra and geometry will be used together.

June : The effect of the Civil War on the South, and the industrial development of the country.

The pupils will continue the study of simple geometrical questions growing out of railroading — grading and embankments, bridges; geometrical study of forces.

REFERENCES (for March): Hammond, *Cotton Industry, Britannica;* Fiske, *Old Virginia and Her Neighbors, Harper's Monthly,* Vol. LXXXVI, November, 1891; Bancroft, *History of the United States;* Winsor, *Narrative and Critical History of America;* McMaster, *History of the United States;* Schouler, *History of the United States.*

REFERENCES (for April) : Ridpath, *History of the United States;* Montgomery, *History of the United States;* Fiske, *History of the United States;* Roosevelt, *Winning of the West;* Drake, *The Making of the Great West;* Blanchard, *Discovery and Conquest of the Northwest;* Parkman, *La Salle and the Discovery of the Northwest;* Parkman, " Address on Northwest Territory," *Old South Leaflets,* No. 42 ; Carr, " Missouri ;" Jones, *Lewis and Clarke Expedition; Wonderland,* for 1900, published by the Northern Pacific Railroad, on Lewis and Clarke ; " Early Settlements in the West," *Harper's,* Vol. LXXI, p. 552 ; " On the Outpost in 1780," *ibid.,* Vol. LXXVI, p. 420 ; " Kentucky," *ibid.,* Vol. LXXVIII, p. 255 ; " Texas," *ibid.,* Vol. LXXXVII, p. 561 ; "California in 1850," *ibid.,* Vol. XXV, pp. 306 and 593 ; " Mining," *ibid.,* Vol. LX, p. 380; " Mining," *ibid.,* pp. 145 and 289; " Goldwashing," *ibid.,* Vol. XLV, p. 445 ; "In the Wahlamet Valley," *ibid.,* Vol. LXV, p. 764.

REFERENCES (for May): " Canadian Pacific Railway," *Harper,* Vol. LXV, pp. 414; " Transportation," *ibid.,* Vol. LX, p. 579; "American Railroads," *ibid.,* Vol. XLIX, p. 375; Rhodes, *History of the United States from 1850;* Fiske, *History of the United States;* Smith, *History of the United States;* Spring, *Kansas;* Robinson, *The Kansas Conflict;* E. E. Hale, *Kansas and Nebraska in 1854;* Schurz, *Henry Clay;* Lamon, *Life of Lincoln;* Morse, *Life of Lincoln;* Tarbell, *Life of Lincoln;* Johnson, *History of the War of Secession; Outlook,* for 1902; *Review of Reviews,* for 1902; Hall, *Cuba and Puerto Rico;* Davy, *Cuba, Past and Present;* Dinwiddi, *Puerto Rico: Its Conditions and Possibilities;* Stevens, *Yesterday in the Philippines;* Forman, *The Philippine Islands and Their People;* Worcester, *The Philippine Islands and Their People;* Sawyer, *Inhabitants of the Philippine Islands.*

REFERENCES (for June): Ropes of the Civil War; Rhodes, *History of the United States from 1850;* Wright, *Industrial Evolution of the United States;* Hammond, *Cotton Industry;* Carpenter, *Geographical Reader.*

Literature.—The class will study the play *Julius Cæsar.*

Geography.—The work in history demands a knowledge of the Louisiana territory, Oregon, Texas, and California. The geography in this connection

will consist of a detailed study of that portion of the United States lying west of the Mississippi river.

The study of the development of railroads in the United States will be followed by a study of railways in general. Attention will be given to Cuban railways and a special investigation of the Trans-Siberian Railway will be made. This work will include not only a study of the railway, but a study of the surrounding country tributary to the railway.

Geography will form an important part of the study of all current events. The correspondence with pupils in foreign countries will be continued.

REFERENCES: Reclus, *Stanford's Compendium of North America ; The Earth and Its Inhabitants;* Mills, *International Geography;* Dana and Davis, *Mississippi Valley;* Shaler, *Story of Our Continent;* Shaler, *United States of America;* King, *Up the Mississippi Valley; Journal of School Geography,* December, 1901.

Railroads : "Cuban Railways," *National Geographic Magazine,* March, 1902; "A Trip through Siberia," *ibid.,* February, 1902 ; Stanford, *Compendium of Asia;* Reclus, "Asia," *Earth and Its Inhabitants;* Mills, *International Geography.*

Current Events : *The Little Chronicle; The Great Round World; The Outlook.*

Nature Study and Related Mathematics.— 1. The work already begun in March will continue throughout the year. As in the fall the pupils studied the distribution of seeds and the decay of plants, so now they will study the renewal of life. This subject presents itself in two aspects, the natural plants uninfluenced by man and plants cultivated by man in the garden or in the field. It is this latter phase we shall take up first. To this end the pupils will plant and care for their own garden, located south of the school building. (See diagram, March issue, p. 495.) They will visit vegetable gardens and farms near the city, and compare the spring industries with the work they saw done in October.

They will then make a study of the topography of a certain area. The work will begin with a general view of the subject, followed by a detailed study of the area chosen. The area will be plotted to scale by the aid of the plane table, all objects, as trees, buildings, etc., having a bearing on the study will be located from measurements on a topographic map. This will call for considerable practical geometry, which will be taught with as much fullness as the development of the subject of study demands. The apparatus used will consist of the simple plane table illustrated and described in the COURSE OF STUDY, Vol. I, No. 7, p. 667, Experiment No. 5 (*b*); of surveyors' chains, compasses and transits.

2. The materials for study will be gathered from the sources named. The work will center on certain features, light, soil, heat, and moisture, which are necessary to growth. (1) Climate: (*a*) increase of temperature ; (*b*) change in the slant of the sun's rays. The pupils will find the relation of the change of angle to the weekly increase of temperature. They will determine the ratio upon which the variation of the intensity of light and heat depends. This will call for a detailed study of the right angle. (2)

Soils: kinds; their locations, properties, and probable origins. (3) Moisture: amount of rainfall on a given area as compared with the average amount of rainfall on the same area for thirty-two years. What becomes of the water? Its action on soil (erosion, solution). Movement.

3. The pupils will make weekly charts containing: (1) List of trees that show the first evidences of growth. (2) List of plants on the ground that show the first evidences of growth. (3) First appearance of animal life. (4) Average weekly temperature. The average weekly temperature will be plotted on cross-barred paper to bring this out clearly. As the first animals appear, the pupils will observe the available food supply. They will be questioned as to their opinion regarding the winter habits of these animals.

Each pupil will select a tree and a plant for continued study. He will find out by experiment what kind of food plants use, and how the plant he is studying obtains this food. He will show, by paintings and drawings, the structure and position of the leaves in response to their light relations. Comparison of class results will enable the pupils to see the various ways in which plants maintain themselves. As flowering begins we shall take up the study of plant reproductions.

REFERENCES: Coulter, *Plant Structure* and *Plant Relations;* Kerner and Oliver. *The Natural History of Plants;* Gay, *The Great World Farm;* King, *The Soil;* Gray, *Physiological Botany* and *Structural Botany;* Bergen, *Elements of Botany;* Sir John Lubbock, *Seedlings;* Herrick, *Chapters on Plant Life;* Bailey, *Talks Afield;* Wright, *Birdcraft;* Miller, *Birds Through an Opera Glass;* Mathews, *Familiar Trees and Leaves* and *Flowers of Field and Garden;* Jordan and Kellogg, *Animal Life;* Comstock, *Insect Life.*

Physical training.—(See seventh grade).

MORNING EXERCISES.

KATHARINE M. STILWELL.

		LEADER.
April 1.	Nature Study	Mr. Jackman
2.	Songs	Mrs. Bradley
3.	Stories of Hunter Life	Miss Mitchell
4.	City of Washington	Miss Stilwell
8.	Spring	Mr. I. B. Meyers
9.	Songs	Mrs. Bradley
10.	March Exercises	Mr. Kroh
11.	Wood	Miss Van Hoesen
15.	The Dryad	Miss Curtis
16.	Songs	Mrs. Bradley
17.	Nature Observations	Mrs. Atwood
18.	Cereals	Mrs. Thomsen
22.	Friedrich Froebel	Miss Allen
23.	Songs	Mrs. Bradley
24.	Bread	Mrs. Norton
25.	French Games	Miss Ashléman
29.	Nature Study	Mr. Jackman
30.	A Playhouse	Miss Wygant